Abstract of the Disclosure

Provided herein are novel phosphors useful in the manufacture of white light emitting diodes. The phosphors provided by the invention are described by the formula:

$$Sr_xBa_yCa_zSiO_4:Eu$$

in which x, y, and z are each independently variable to be any value between about 0 and about 2, including without limitation 0.001 and 2, and every thousandth therebetween, subject to the proviso that the sum of x, y, or z is equal to at least 1, and in which Eu is present in any amount between about 0.0001 % and about 5 % by weight based upon the phosphor's total weight, wherein substantially all of the europium present is present in the divalent state. A phosphor according to the invention may optionally further comprise an element selected from the group consisting of: Ce, Mn, Ti, Pb, and Sn and is present in any amount between about 0.0001% and about 5 % by weight based on the phosphor's total weight. The silicate phosphor materials provided by the present invention do not require the addition of dissimilar blue and red phosphor compounds, and do not contain zinc and/or magnesium. In addition, the present invention provides materials which emit a broad yellowish color containing both green and red emissions.

Standard techniques used in phosphor deposition for the manufacture of light emitting diodes which comprise phosphors may be employed to produce LED's having a white light output when the phosphors of the invention are utilized.